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RIO 2012 Issues Briefs

Produced by the UNCSD Secretariat and the Partnership for Sustainable, Low Carbon Transport (SLoCaT)

March 2012
No. 13

RIO+20 United Nations Conference on Sustainable Development

Sustainable, Low Carbon Transport in Emerging and Developing Economies

1. Introduction

At the World Summit on Sustainable Development (WSSD) held in Johannesburg in 2002, Member States agreed to "promote an integrated approach to policymaking at the national, regional and local levels for transport services and systems to promote sustainable development, including policies and planning for land use, infrastructure, public transport systems and goods delivery networks, with a view to providing safe, affordable and efficient transportation, increasing energy efficiency, reducing pollution, congestion and adverse health effects and limiting urban sprawl, taking into account national priorities and circumstances."[1]

Since then, the transport sector in countries with emerging and developing economies has experienced rapid growth, which is expected to continue over the coming decades. Based on data from the International Energy Agency, the International Transport Forum estimates that by 2050 freight volumes of non-OECD countries could increase by a factor of four to five compared to 2000 levels, while passenger mobility could increase five to more than six-fold over the same period.[2] China has overtaken the United States as the largest market for automobiles, and is now also the largest producer of automobiles. Other emerging economies such as Brazil, India and Mexico show similar rapid growth patterns.

The overall structure of the transport sector in the developing world is changing because of rapid urbanization. While Latin America is already highly urbanized, Africa and especially Asia are still undergoing rapid urbanization. It is expected that China and India alone will add 500 million people to their urban population in the next 20 years. This implies a growing need for urban transport services to prevent or overcome patterns of sprawl and congestion, and to ensure access to goods and services.

The automotive industry itself is initiating a possible shift from the internal combustion engine to electric vehicles. The expectation is that the role of traditional automobile manufacturers will increasingly include provision of mobility solutions, which might also include charging infrastructure and renewable energy resources, to ensure the environmental benefits of a shift towards electric mobility.

Since the WSSD, there has been growing realization that the current rapid unrestrained growth in private motorization is not sustainable. While additional transport infrastructure and services are required to create better access to jobs, markets, schools, and health facilities to promote economic and social development, the manner in which transport has grown in recent years is actually undermining the very economic and social progress it is supposed to enable. Each year, millions of people die or are unable to continue working or attending school because of road accidents or exposure to air pollution from vehicles. People in emerging and developing economy countries are disproportionately affected, and within these countries it is the poor who are most affected. The economic cost of air pollution, road accidents and worsening congestion in many of the cities in the developing world is now believed to range from five to ten per cent of GDP.[3] Concern about the sustainability of transport in emerging and developing economies has deepened because of the potential carbon footprint of transport in these countries. Although current per capita transport emissions in developing countries are relatively low compared to OECD countries, close to 90 per cent of the increase of global transport related GHG is expected to take place in developing countries, mostly from private vehicles and freight.

As a consequence, the focus on transport has shifted away from moving goods and people to ensuring access to goods and services. The new thinking is exemplified by the Avoid-Shift-Improve (ASI) approach:

(a) Avoid the need for unnecessary travel in providing improved access to goods and services, for example, by the integration of land use and transport policies;

(b) Shifting travel to the most efficient mode, which in most cases will be either non-motorized or public transport for passenger transport, and to rail or water transport for freight; and

(c) Improving existing forms of transport through technological improvements to make engines and fuels less carbon intensive.

All aspects of the ASI approach have been successfully implemented in cities and on a national scale, with many cases in emerging and developing economies, and is now a key strategy for many *organization*s working on transport in developing countries.

2. Transport and the green economy in the context of sustainable development and poverty eradication

Transport comprises a significant economic sector in most countries. Its direct contribution to GDP is in the range of five to ten per cent, while its indirect contribution to providing access to

[1] Johannesburg Plan of Implementation, paragraph 21.

[2] See http://www.internationaltransportforum.org/Pub/pdf/11Outlook.pdf

[3] See Dalkmann,Holger, Sakamoto,Ko et al.(2011), *Transport: Investing in energy and resource efficiency*,p.404, http://www.unep.org/greeneconomy/GreenEconomyReport/tabid/29846/Default.aspx

jobs and markets and enabling trade is hard to quantify but generally believed to be significant. This makes it a critically important sector for the 2012 United Nations Conference on Sustainable Development (Rio+20). On 25 January 2012, The Secretary-General's Five Year Action Agenda[4] announced plans to mobilize the UN system in supporting global, regional and national strategies to "convene aviation, marine, ferry, rail, road and urban public transport providers, along with Governments and investors, to develop and take action on recommendations for more sustainable transport systems that can address rising congestion and pollution worldwide, particularly in urban areas". The account of the green economy theme given in the Secretary-General's Report on the Objective and Themes of Rio+20[5] confirms and reinforces the approach taken by the international transport community in promoting sustainable development of transport. Sustainable transport not only limits its environmental footprint but also spurs economic and social development. This was reflected in the definition of environmentally sustainable transport included in the 2011 Bogotá Declaration on Sustainable Transport Objectives[6]:

"The provision of services and infrastructure for the mobility of people and goods is needed for economic and social development and improved quality of life and competitiveness. These services and transport infrastructure provide secure, reliable, economical, efficient, equitable and affordable access to all, while mitigating the negative impacts on health and the environment locally and globally, in the short, medium and long term without compromising the development of future generations."

Applying the Avoid-Shift-Improve approach fits in well with the theme of green economy and can ensure progress in all three pillars of sustainable development (economic, social and environmental). It will speed up the introduction and penetration of low carbon technologies, change the behaviour of consumers towards more sustainable transport solutions (which is likely to reach beyond the transport sector), and create large numbers of green jobs.

Application of green economy in the transport sector generally involves technological change, including efficiency enhancements, demand reduction and changes in consumer behaviour. In the case of the transport sector, changes in consumer behaviour can mean abandoning the use of private cars in favour of public transport or non-motorized transport. Demand reduction can involve limiting access to private cars through imposing auction or lottery-based vehicle quotas. Overall, there is a close correlation between reducing the energy intensity of the transport sector through the ASI approach and the realization of a green economy in the transport sector.

The non-environmental benefits of green economy in transport as implemented through the ASI approach are considerable. Stronger focus on public transport and non-motorized transport will strengthen access for low income groups. Reduced congestion and air pollution, as well as improved road safety, can translate into economic savings equal to several percentage points of GDP. Since transport has such large and broad externalities, it makes the transport sector one of the most promising sectors in terms of its impact on the implementation of a green economy. Long-term economic and social benefits, including improved health due to reduced pollution, can be achieved through investment in infrastructure and planning, while simultaneously creating valuable jobs.

The impact of a shift to a green economy in the transport sector will be largest in emerging and developing economies because of the expected growth of the transport sector in these countries. Rapid and comprehensive implementation of green growth in countries like Brazil, China and India can help to bring about a more sustainable growth trajectory of the transport sector in these countries, in a manner that would be less car-dependent than more developed transport sectors such as the United States and Europe.

3. Transport and the Institutional Framework for Sustainable Development (IFSD)

It is important to consider transport as a topic in its own right. Dealing with transport as part of the energy sector tends to overemphasize technological solutions because of their direct relationship to energy consumption (constituting the "improve" aspect of the ASI approach). Treating transport as part of the energy sector tends to overemphasize the environmental dimension of transport sustainability; road safety and affordability of public transport are mostly social and economic issues but are of great importance for the overall sustainability of the transport sector. Similarly, dealing with transport as part of the urban sector ignores the fact that there is a continued need for improved transport services in rural areas in support of better access to markets, health and educational facilities. Also, freight and logistics — which to a large extent are national processes — do not fit in well with an exclusive urban focus.

The progress made in raising awareness on the sustainability of transport systems in developing and emerging economies, including the development of the ASI approach to enhance sustainability and the field testing of the various components under ASI, was realized through relatively loose and uncoordinated action which involved a large range of stakeholders, including visionary cities, international and national NGOs, MDBs and UN organizations. More institutionalized approaches are now required to put in place comprehensive ASI-inspired policy and financing frameworks to rapidly scale-up ASI linked programmes and measures. To be successful in realizing such policy changes and considerably scaled-up investments programmes, institutional actors can no longer work in parallel but need to increasingly act together in a concerted manner. Policy advocacy and pilot projects need to move on to policy formulation and national programmes. This will require an active involvement of Governments, including departments that have a mandate for supporting and guiding cities and local authorities.

[4] See http://www.un.org/sg/priorities/sg_agenda_2012.pdf

[5] See http://www.uncsd2012.org/rio20/index.php?page=view&type=400&nr=10&menu=45

[6] See www.uncrdlac.org/fts/BogotaDeclaration.pdf by Argentina, Brasil, Bolivia, Chile, Colombia, Ecuador, México, Paraguay, and Uruguay, June 2011.

Box 1. Successful examples of the Avoid-Shift-Improve approach

Access while avoiding unnecessary travel:
- Vehicle quotas allocated through auction or lottery (Singapore, Shanghai and Beijing)
- Congestion charging (London, Stockholm, Milan)
- Freight charging (Germany)
- Integrated mixed land use plans in a large range of cities

Shift to transport-efficient modes:
- Bus Rapid Transit (over 100 cities, mostly in the developing world)
- Public bike schemes (over 200 cities, many in the developing world)
- Rail-based mass transit (many cities)
- Pedestrianization (many cities)

Improve:
- Inspection and maintenance programmes to reduce local pollution
- Fuel quality standards
- Electric bikes (millions — annual production in China is now more than 20 million)
- Electric cars, buses and other four-wheeled vehicles (plans for seven million by 2020)
- Fuel efficiency regulation (most of the developed world, increasing parts of the developing world)

There are examples of an IFSD for transport having positive outcomes in Asia, Latin America and Europe. Through the Bangkok 2020 Declaration[7] (August 2010) and the Bogotá Declaration[8] (June 2011) 31 countries in Asia and Latin America have expressed their support for a growth path that emphasizes environmental, social and economic sustainability of the transport sector. The development and adoption of the these two declarations was facilitated by the Environmentally Sustainable Transport Forum (EST), which since 2004 has regularly convened authorities from Ministries of Health, Transport, Environment and Urban Management in 23 Asian countries to discuss the adoption and implementation of balanced social economic and environmental goals for transport, and in 2011 initiated a similar intergovernmental forum in Latin America that includes nine Latin American countries. In Europe, the United Nations Economic Commission for Europe (UNECE) hosts the Transport, Health and Environment Pan-European Programme (THE PEP), with 36 countries in Europe, Central Asia, and the United States (also a member of UNECE) agreeing to the Amsterdam Declaration[9] (January 2009).

Strengthening IFSD specific to the transport sector will also help to strengthen the coherence of a range of international partnerships on sustainable transport that have manifested in recent years, and possibly increase their impact with emerging and developing economies. Examples of these international partnerships are:

(a) Global Decade of Action on Road Safety, which is now an official UN campaign;[10]

(b) 50 by 50 Campaign, aimed at improving fleet fuel efficiency by 50 per cent by 2050, initiated by the Federation Internationale de l'Automobile (FIA Foundation), International Energy Agency, International Transport Forum and UNEP[11];

(c) Doubling the share of public transport by 2025, initiated by the public transport sector[12];

(d) Partnership on Clean Fuels and Vehicles, which aims to eliminate lead, lower sulphur and promote clean vehicles[13]; and

(e) Partnership on Sustainable, Low Carbon Transport, which works to improve knowledge on sustainable low carbon transport and helps develop better policies as well as catalyze their implementation.[14]

The strengthening of transport sector-specific IFSD in support of a transition to a green economy needs to go hand in hand with the creation and strengthening of adequate financing frameworks. It is also important to redirect current financial incentives such as fuel subsidies used to promote private motorization[15]. Annual

[7] http://www.uncrd.or.jp/env/5th-regional-est-forum/doc/bangkok_declaration.pdf
[8] http://www.uncrdlac.org/fts/BogotaDeclaration.pdf
[9] See http://www.unece.org/thepep/en/welcome.html

[10] See http://www.who.int/roadsafety/en/
[11] See www.50by50campaign.org
[12] See http://www.ptx2uitp.org/content/ptx2-project
[13] See www.unep.org/transport/pcfv
[14] See www.slocat.net
[15] Global fossil-fuel consumption subsidies amounted to US$ 409 billion in 2010 according to the International Energy Agency. In addition, the OECD estimates that subsidies for fossil-fuel production and consumption in its member countries cost US$ 45-75 billion annually. Globally, producer subsidies are estimated by the Global Subsidy Initiative to be at least US$ 100 billion annually. See

financing by bilateral and multilateral development banks for transport in emerging and developing economies is about US$ 20-30 billion per year. Several of the development banks have now adopted strategic frameworks which prioritize sustainable transport over the construction of roads. So far, development bank funding is not well linked to emerging intergovernmental policy dialogues on sustainable transport. Having such a linkage could increase interest from the Governments of emerging and developing economies to actively take part in such intergovernmental processes and implement their recommendations.

4. Conclusion and recommendations

Transport is a key sector for sustainable development. The transport sector is changing, especially in emerging and developing economies. Since the WSSD in 2002, progress has been made in raising the issue of sustainability in the transport sector, including the development and pilot testing of the ASI approach, which now offers a more sustainable alternative to the current growth pattern of unrestrained private motorization. The transport sector is of particular relevance to the green economy theme of Rio+20 because of its potential for wide-ranging environmental, economic and social development benefits. However, for the transport sector to be able to make a significant contribution to the transition to a green economy it is important to have transport sector-specific IFSD that will enable UN organizations and multilateral development banks supported by other stakeholders to take on a lead role in scaling-up effective sustainable, low carbon transport policies and interventions. The transport sector must also create and strengthen effective financing frameworks to fund sustainable transport infrastructure and services that can keep pace with rapidly growing cities in emerging and developing economies.

The development of the transport sector within the transition to a green economy would be well served by the adoption of a Sustainable Development Goal specific to transportation: "*Achieve sustainable transport that enables universal access to safe, clean, and affordable mobility*".[16] This can be accompanied by:

a. Adopting targets and indicators to measure progress towards sustainable transport and promote the development and adoption of control plans for transport-related pollution:

   - Ensure that global transport greenhouse gas emissions and transport sector fossil fuel consumption peak by 2020 and are cut by at least 40 percent by 2050 compared to 2005 levels,[17] while ensuring transport contributes to the timely attainment of healthful air quality in all cities;

   - Support the Decade of Action for Road Safety (2011-2020) and cut traffic-related deaths in half by 2025;[18]

   - Provide universal access to sustainable transport though support for safe, affordable public transport and safe, attractive facilities for walking and bicycling.

b. Strengthening institutional arrangements to advance sustainable transport involving United Nations entities, development agencies and banks, multilateral carbon finance instruments and the private sector.

c. Endorsing and encouraging voluntary country actions for sustainable transport through prioritizing the provision of ASI strategies.

d. Shifting development finance towards more sustainable land use and transport infrastructure.

The purpose of the Rio 2012 Issues Briefs is to provide a channel for policymakers and other interested stakeholders to discuss and review issues relevant to the objective and themes of the conference, including a green economy in the context of sustainable development and poverty eradication, as well as the institutional framework for sustainable development.

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The Partnership on Sustainable, Low Carbon Transport (SLoCaT) improves the knowledge on sustainable low carbon transport, helps develop better policies and catalyze their implementation. Over 65 organizations have joined the Partnership, including UN organizations, multilateral development banks, technical cooperation agencies, NGOs, research organizations and other organizations. SLoCaT is a voluntary multi-stakeholder initiative that contributes to the implementation of Agenda 21, Rio+5 and the Johannesburg Plan of Implementation (JPOI). The Partnership is documented on the UNCSD Partnership website as well as on www.slocat.net.

http://www.uncsd2012.org/rio20/index.php?page=view&type=510&nr=48&menu=20&template=509&str=GSI.

[16] This and the subsequent recommendations are part of a larger set of recommendations submitted by the SLoCaT Partnership as a contribution to the compilation document for the Rio+20 UN Conference on Sustainable Development. See http://www.uncsd2012.org/rio20/index.php?page=view&type=510&nr=241&menu=20&template=509&str=LOw%20Carbon%20Transport

[17] Such reductions have been shown by the International Energy Agency to be achievable, IEA (2009), *Transport, Energy, and CO2*, http://www.iea.org/publications/free_new_Desc.asp?PUBS_ID=2133

[18] The Global Decade on Road Safety is campaigning for 'Safer Roads @ Rio+20', which is an initiative led by the Make Roads Safe campaign, building on the momentum of the UN Decade of Action for Road Safety to broaden the coalition supporting action to prevent 5 million road deaths by 2020. http://www.makeroadssafe.org/takeaction/Pages/homepage.aspx.